

## **Executive Summary**

The purpose of Technical Report 2 is to look at and examine the existing electrical system of the Newseum and Freedom Forum Headquarters building. A description of the buildings distribution system is given, as is a description of the service entrance at the B-1 Mezzanine level. The two voltage systems that operate throughout the building were then identified by type and by what loads they go to. The methods used for emergency power and over-current devices in the main switchgear were also researched. Following these descriptions of the electrical systems are tables listing the buildings transformers, switchgear, lighting loads, and mechanical and other loads. Some information regarding the utility company and rates for the Newseum was also gathered. Service is provided to the building by PEPCO.

After all of the previous information was gathered, calculations concerning the Newseums service entrance size were completed. This was done by a total of three methods. The first was load per square foot. This was then followed by a calculation using demand factors from the National Electric Code (NEC). The final calculation was an actual loading calculation. Lighting panelboard loads and mechanical loads were used figure out the total loading of the building. The total load from each step was divided by three in order to account for the three service entrances. These values were then compared to the actual equipment ratings. It was found the main switchboard sizes of 4000 A is higher than that required. However this allows for expansion and additional loading in the future.

Finally, a single line diagram for each service entrance to the Newseum was prepared using the existing riser diagram.